CLAIMS

A method for controlling the end point of the chemical mechanical polishing (CMP) of a surface having a plurality of projecting components fabricated thereon, comprising the steps of:

fabricating a plurality of upwardly projecting components upon a substrate surface;

fabricating a CMP polishing end stop layer above said components;

fabricating a polishable layer above said stop layer;

conducting a CMP polishing step utilizing a polishing slurry that selectively removes said polishing layer as compared to said stop layer;

removing portions of said stop layer subsequent to said polishing step.

2. A method for controlling CMP polishing as described in claim 1 wherein said stop layer is composed of a substance that is significantly more resistant to polishing removal by said slurry than said polishable layer.

3. A method for controlling CMP polishing as described in claim 2 wherein portions of said stop layer are deposited upon a top surface of said projecting components.

4. A method for controlling CMP polishing as described in claim 2 wherein said stop layer is deposited upon a top surface of a first material layer that is deposited in part upon a top surface of said projecting components and in part upon a top surface of said substrate.

5. A method for controlling CMP polishing as described in claim 2 wherein said stop layer is comprised of a substance selected from the group consisting of tantalum and diamond-like-carbon (DLC).

6. A method for controlling CMP polishing as described in claim 5 wherein said stop layer is formed with a thickness of from 200 to 500 Å.

7. A method for controlling CMP polishing as described in claim 5 wherein said stop layer is comprised of tantalum and is formed with a thickness of approximately 500 Å.

8. A method for controlling CMP polishing as described in claim 5 wherein said stop layer is comprised of DLC and is formed with a thickness of approximately 200 Å.

9. A method for controlling CMP polishing as described in claim 2 wherein said stop layer is removed utilizing an ion etching process.

10. A method for controlling CMP polishing as described in claim 2 wherein said stop layer is comprised of tantalum and wherein said stop layer is removed utilizing an argon ion etching process.

11. A method for controlling CMP polishing as described in claim 2 wherein said stop layer is removed utilizing a CMP process.

12. A method for controlling CMP polishing as described in claim 2 wherein said stop layer is comprised of DLC and wherein said stop layer is removed through use of a reactive ion etch process utilizing oxygen reactive species.

13. A method for controlling CMP polishing as described in claim 2 wherein said stop layer is comprised of DLC and wherein said stop layer is removed by use of a plasma ashing process utilizing oxygen.

14. A method for controlling CMP polishing as described in claim 2 wherein an end stopping point of said CMP process is determined by monitoring a polishing motor current during said CMP polishing step.

15. A method for controlling the end point of a chemical mechanical polishing (CMP) process of a surface having a plurality of upwardly projected components fabricated thereon, comprising the steps of:

depositing a polishing stop layer upon said components, with portions of said stop layer being deposited upon the top surface portions of said components;

depositing a polishable layer upon said stop layer;

conducting a CMP polishing step utilizing a polishing slurry that selectively removes said polishing layer as compared to said stop layer; wherein said CMP polishing step is conducted down to said portions of said stop layer that cover said top surface portions of said components;

removing said portions of said stop layer that cover said top surface portions of said components.

16. A method for controlling CMP polishing as described in claim 15 wherein said polishable layer is deposited to a depth that is greater than the projecting height of said components.

17. A method for controlling CMP polishing as described in claim 16 wherein said stop layer is comprised of a substance selected from the group consisting of tantalum and diamond-like-carbon (DLC).

18. A method for controlling CMP polishing as described in claim 17 wherein said stop layer is formed with a thickness of from 200 to 500 Å.

19. A method for controlling CMP polishing as described in claim 17 wherein said stop layer is comprised of tantalum and is formed with a thickness of approximately 500 Å.

20. A method for controlling CMP polishing as described in claim 17 wherein said stop layer is comprised of DLC and is formed with a thickness of approximately 200 Å.

21. A method for controlling CMP polishing as described in claim 17 wherein said stop layer is removed utilizing an ion etching process.

22. A method for controlling CMP polishing as described in claim 16 wherein said stop layer is comprised of tantalum and wherein said stop layer is removed utilizing an argon ion etching process.

23. A method for controlling CMP polishing as described in claim 16 wherein said stop layer is removed utilizing a CMP process.

24. A method for controlling CMP polishing as described in claim 17 wherein said stop layer is comprised of DLC and wherein said stop layer is removed through use of a reactive ion etch process utilizing oxygen reactive species.

25. A method for controlling CMP polishing as described in claim 17 wherein said stop layer is comprised of DLC and wherein said stop layer is removed by use of a plasma ashing process utilizing oxygen.

26. A method for controlling CMP polishing as described in claim 16 wherein an end stopping point of said CMP process is determined by monitoring a polishing motor current during said CMP polishing step.

27. A method for controlling the end point of a chemical mechanical polishing (CMP) process of a substrate surface having a plurality of upwardly projecting components fabricated thereon, comprising the steps of:

depositing a first layer of material upon said substrate, wherein a projecting portion of said first layer of material is deposited on top of said components;

depositing a polishing stop layer upon said first layer of material, with a portion of said stop layer being deposited on top of said projecting portions of said first layer;

depositing a polishable layer on top of said stop layer, wherein portions of said polishable layer are deposited on top of said portion of said stop layer that are deposited on top of said projecting portions of said first layer;

removing portions of said polishable layer and said stop layer that are deposited on top of said projecting portions of said first layer;

conducting a CMP polishing step utilizing a polishing slurry that selectively removes said polishable layer as compared to said stop layer;

removing said stop layer from said first layer.

28. A method for controlling CMP polishing as described in claim 27 wherein said first layer is deposited to a depth that is less than the projecting height of said components.

29. A method for controlling CMP polishing as described in claim 28 wherein said stop layer is comprised of a substance selected from the group consisting of tantalum and diamond like carbon (DLC).

30. A method for controlling CMP polishing as described in claim 28 wherein said stop layer is formed with a thickness of from 200 to 500 Å.

31. A method for controlling CMP polishing as described in claim 28 wherein said stop layer is comprised of tantalum and is formed with a thickness of approximately 500 Å.

32. A method for controlling CMP polishing as described in claim 29 wherein said stop layer is comprised of DLC and is formed with a thickness of approximately 200 Å.

33. A method for controlling CMP polishing as described in claim 28 wherein said stop layer is removed utilizing an ion etching process.

34. A method for controlling CMP polishing as described in claim 28 wherein said stop layer is comprised of tantalum and wherein said stop layer is removed utilizing an argon ion etching process.

35. A method for controlling CMP polishing as described in claim 28 wherein said stop layer is removed utilizing a CMP process including.

36. A method for controlling CMP polishing as described in claim 29 wherein said stop layer is comprised of DLC and wherein said stop layer is removed through use of a reactive ion etch process utilizing oxygen reactive species.

37. A method for controlling CMP polishing as described in claim 29 wherein said stop layer is comprised of DLC and wherein said stop layer is removed by use of a plasma ashing process utilizing oxygen.

38. A method for controlling CMP polishing as described in claim 28 wherein an end stopping point of said CMP process is determined by monitoring a polishing motor current during said CMP polishing step.